

Notice of Allowability

Application No.

10/676,060

Examiner

Mark Ruthkosky

Applicant(s)

ARIYOSHI ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 3/8/2007.
2. ☒ The allowed claim(s) is/are 1.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/8/2007 has been entered.

Examiner's Amendment

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

Cancel claims 2-5

Claim Rejections - 35 USC § 103

The rejection of claim 1 under 35 U.S.C. 103(a) as being unpatentable over Einhart et al. (EP 1,001,666), in view of Tanaka et al (JP 09-283,166) and further in view of Early et al. (US 4,310,605.) has been overcome by applicant's amendment to the claim.

Allowable Subject Matter

Claim 1 is allowed.

The following is an examiner's statement of reasons for allowance:

The instant claim is to a fuel cell comprising:

a plurality of cells;

a plurality of separators, wherein two adjacent separators sandwich one of the plurality of cells, and each of the plurality of separators has a terminal protruding from one end of the corresponding separator, the plurality of separators are stacked such that all the terminals are on a same side of a fuel cell stack and protruding from the same side of the fuel cell stack;

a fuel box enclosing the plurality of cells and the plurality of separators, the fuel box includes one or more openings to allow the terminals from the plurality of separators to protrude outside the fuel box;

a processing circuit outside of the fuel box processing an electrical output signal of each of the plurality of cells composing the fuel cell stack;

a connector outside of the fuel box connecting said processing circuit with the plurality of terminals from the plurality of separators, wherein the connector includes a plurality of slots enclosing the terminals; and a casing enclosing said processing circuit and said connector.

The prior art does not teach a fuel cell including these elements in the claimed arrangement wherein the connector includes a plurality of slots enclosing the terminals. The most pertinent prior art has been made of record. For example, Einhart et al. (EP 1,001,666) teaches a fuel cell comprising a fuel cell stack including a plurality of fuel cells sandwiched by separators and electrically connected through the separators. The cells are arranged into clusters

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and include clusters of terminals extending from the separators. The fuel cell includes a processing circuit connected to the separator. A plurality of connector modules includes a connector portion and a main body portion that is smaller in width than the connector portion. The terminal clusters are alternately provided at a first side of a first end of a separator and the other at a second side of the first end. The fuel cell is enclosed in a case. The circuit can be used to monitor operating parameters like current or voltage (p. 44.) The reference does not teach a fuel box, as claimed, or that the connector includes a plurality of slots enclosing the terminal.

In addition, Tanaka et al (JP 09-283,166) teaches a fuel cell stack including a plurality of fuel cells sandwiched by separators and electrically connected through the separators (figures 1-4.) The fuel cell includes a processing circuit connected to the separator through terminals (6) formed in separator holes on the same side of the fuel cell stack. A voltage-measuring device is connected to terminals of the separator plate. A connector and processing circuit are noted (abstract.) The reference does not teach a fuel box, as claimed, or that the connector includes a plurality of slots enclosing the terminal.

Early et al. (US 4,310,605) teaches a fuel cell comprising a fuel cell stack including a plurality of fuel cells sandwiched by separators and electrically connected through the separators (figures 1-3.) The cells are arranged into clusters and include clusters of terminals extending from the separators (see col. 5, line 63-col. 6, line 13, figures 6-7 and 9.) A sheet body is disclosed between cell clusters. The fuel cell includes a processing circuit connected to the separators (figure 7.) A plurality of connector modules include a connector portion and a main body portion that is smaller in width than the connector portion (figures 6-7 and 9.) The terminal clusters are alternately provided at a first side of a first end of a separator and the other at a

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second side of the first end (see figures 6, 7, and 9 and the corresponding text.) The connector includes a plurality of slots enclosing the terminal (figures 3, 5 and the corresponding text.) The reference does not teach a fuel box, as claimed, that the connector includes a plurality of slots enclosing the terminal or a casing enclosing the processing circuit and connector.

Because of the specific arrangement of the separator terminals in the fuel cell and through the fuel box, the location of the processing circuit and connector, and the arrangement of the connector including a plurality of slots enclosing the terminals to give a connection arrangement outside of the box and inside of the fuel cell casing not found in the art, the claim is allowed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Examiner Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:30.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free.)

Mark Ruthkosky

Primary Patent Examiner

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Mark Ruthkosky 3.18.2007

**MARK RUTHKOSKY
PRIMARY EXAMINER**